REMARKS

Please reconsider this application in view of the above amendments and the following remarks.

- Claims 2-6 and 8-37 are pending.
- Claims 2-6, 17-23, and 31-37 are rejected.
- Claims 8-16 and 24-30 are withdrawn from consideration.
- Claims 38-40 are newly added.

Support for the amendments to claims 31 and 37 can be found in the specification. See, for example, page 35. Support for newly added claims 38 and 39 can be found in the specification, as filed. See, for example, page 38. Support for newly added claim 40 can be found in the specification, as filed. See, for example, page 51.

Applicants' Response to the Examiner's Discussion of Applicants' Previously Submitted Remarks.

The following text comes from the section 9 of the outstanding office action.

> First, Applicant's argument that no need to apply a pressure onto the surface of the recording medium if jetting a dye ink onto the recording medium to form a dye ink image so it is not obvious from the teaching of Takekoshi is not persuasive because Takekoshi does not mention about what kind of the ink can be use so it could be a pigment or dye, therefore, it would be obvious to use a pigment ink as taught by Ohta for the purpose of obtaining an extremely excellent in water resistance and light fastness image.

Operation of Takekoshi

In Takekoshi, ink is jetted onto media. Takekoshi requires this media to have a surface coating of a thermoplastic resin (also called a latex). (See Takekoshi, column 3, line 9, and figure 4.) When the ink is jetted onto the media, it first contacts the thermoplastic coating and then passes through the porous thermoplastic coating into the ink fixing layer, 1C. (See Takekoshi, column 3, lines 10-20). Afterwards, the thermoplastic layer is fused with heat and pressure to remove its porosity and to seal the ink underneath the thermoplastic layer. (See Takekoshi, column 3, lines 22-32).

Takekoshi does not specify that its ink is a dye-based ink. But Takekoshi does require that its ink is capable of passing through an outer, porous, thermoplastic coating into an ink fixing layer. (See Takekoshi, column 3, lines 10-20). The only evidence of record dealing with whether a pigment-based ink can in fact pass through such an outer layer shows that pigment-based inks typically deposit on the surface of the substrate. (See previous Office Action response, page 9 and below).

In an inkjet recording apparatus, when a recording head jets pigment ink onto a recording medium so as to form a pigment ink image, the jetted pigment remains as particles on the surface of the recording medium as shown in Fig. A. When a recording head jets dye ink onto a recording medium so as to form a dye ink image, no particles remain on the surface of the recording medium as shown in Fig. B.

FIG. A

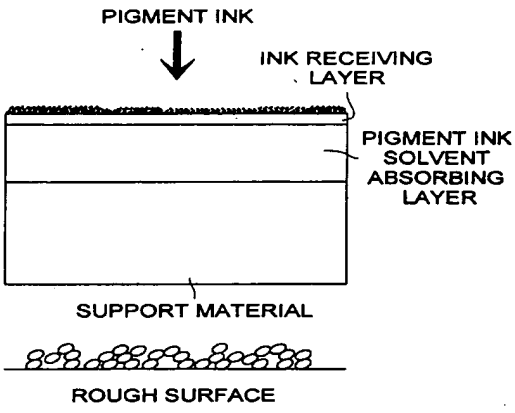
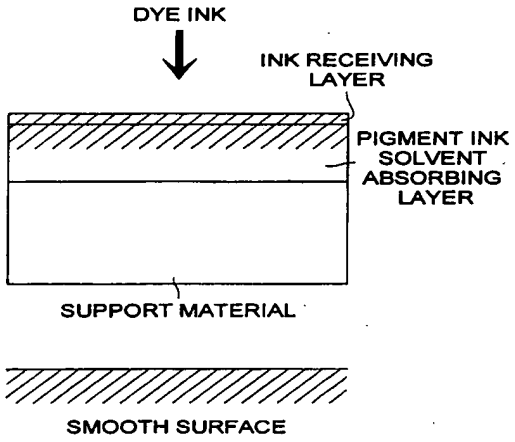


FIG. B



It is incumbent upon the examiner to provide evidence showing that one of ordinary skill in the art would expect a pigment-based ink to behave as required by Takekoshi -- that is, that the ink would not leave pigment particles on the surface, but would penetrate through an outer thermoplastic layer. Otherwise, the examiner's assertion that one of ordinary skill in the art would obviously substitute a pigment-based ink into the process of Takekoshi is merely examiner argument.

Discussion of Art-Based Rejections (the numbering for each section below parallels that of the outstanding Office Action.)

3. Claims 31- 33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ohta et al (USPN 4,597,794) and Iwao (USPN 6,390,617).

The cited ternary combination does not amount to prima facie obviousness because the combination does not contain each and every element of the claimed invention and because there is no motivation to make the combination: one of ordinary skill in the art would expect the combination to be inoperative or at least would not reasonably expect the combination to succeed, would not expect the combination to result

in an improved invention, and would read the references as teaching away from their combination.

First and foremost, this combination does not teach the limitation of "the pigment ink solvent absorbing layer having a void layer which absorbs a pigment ink solvent". Therefore, the cited combination does not make Applicants' invention, as claimed, obvious. The examiner should promptly remove this rejection because a combination that does not teach all of the limitations of a claim, as a matter of law, does not demonstrate prima facie obviousness.

The examiner bases this obviousness-type rejection on Takekoshi in view of Ohta and Iwao. To demonstrate a prime facie case of obviousness, the examiner must identify an explicit motivation to make the cited combination. In the current Office Action, the examiner has pointed out a purported motivation to combine Takekoshi with Ohta and separately a purported motivation to combine Takekoshi with Iwao. The examiner does not explain why one of ordinary skill in the art would be motivated to combine Iwao and Ohta SIMULTANEOUSLY with Takekoshi. Until the examiner puts forth that explanation, the examiner has not demonstrated prima facie obviousness for these claims.

If "It would have been obvious to one having ordinary skill in the art at the time the invention was made when [sic] using pigment ink as taught by Ohta for the purpose of obtaining an extremely excellent in water resistance and light fastness image [sic]," as the examiner contends on page four of the instant Office Action, why would one of ordinary skill in the art also combine the teachings of Iwao? If the combination with Ohta was not expected to be sufficient to improve Takekoshi's process, why would one of ordinary skill in the art expect success by combining Takekoshi with Ohta AND Iwao? On the other hand, if "It would have been obvious to one having ordinary skill in the art at the time the invention was made with [sic] the pressing force of 4.3×10^5 as taught by Iwao for the purpose of making the ink stick on the medium more properly therefore [sic] obtain high-quality image," as the examiner contends on page four of the instant Office Action, why would one of ordinary skill in the art also combine the teaching of Ohta? If the combination with Iwao was not expected to be sufficient to improve Takekoshi's

process, why would one of ordinary skill in the art expect success by combining Takekoshi with Iwao AND Ohta?

Second to the lack of motivation for the ternary combination discussed above, the binary combination of Takekoshi with Ohta or the binary combination of Takekoshi with Iwao do not amount to prima facie obviousness either. Moreover, the fact that Takekoshi combined with Ohta is not proper, and the fact that Takekoshi combined with Iwao is not proper is an alternative reason that the ternary combination discussed above is improper.

Takekoshi combined with Ohta does not rise to prima facie obviousness for the claimed invention and regardless of that is improper. For instance, the simple combination does not teach the pressure limitation nor the limitation of "the pigment ink solvent absorbing layer having a void layer which absorbs a pigment ink solvent" as is required by Applicants' claims. Moreover, although Ohta teaches the advantage of a pigment ink image, Ohta does not teach or suggest a problem of the pigment ink image. This means that there is no evidence that skilled artisans had reason to improve upon Takekoshi combined with Ohta, as would be necessary to support prima facie obviousness for the three-way combination of section three. Without the need for improvement, one of ordinary skill in the art is not motivated to change an invention.

In addition to lacking motivation for combining Takekoshi with Ohta, this combination would be inoperative. Furthermore, the beneficial effects pointed to by the examiner would not in fact occur on combining Takekoshi with Ohta. As discussed above, one of ordinary skill in the art would expect that substituting a pigment-based ink into Takekoshi's process or apparatus would provide a recording media with pigment deposited on the surface of the thermoplastic layer. Heating and pressing this arrangement of pigment on top of the thermoplastic would result in an image with poorer water resistance than the image produced by Takekoshi. Takekoshi seals its ink underneath the thermoplastic layer so that water cannot attack the ink, while the cited combination would result in a final image with free pigment at the surface of the image where water could attack the ink. Thus, the image would not be improved, contrary to the examiner's contention.

Because the substitution would result in a poorer image, one of ordinary skill in the art would not substitute a pigment-based ink into Takekoshi's process or apparatus. But for the current claims, a case of prima facie obviousness requires inclusion of a pigment-based ink because it is incumbent upon the examiner to show that the prior art teaches or suggests each and every element of Applicants' claims. Because the examiner has not shown a motivation to substitute a pigment-based ink into Takekoshi's process or apparatus, the examiner has not made out a case of prima facie obviousness. Even if a motive were shown, the combination would remain inoperative.

As can be seen, Takekoshi requires an ink that is capable of passing through a porous thermoplastic layer. One of ordinary skill in the art would not expect this capability in a pigment-based ink, because a skilled artisan would expect the size of the pigment particles to prevent such passage. Moreover, Takekoshi's goal of achieving a water-fast image would not be met. Therefore, the simple combination of Ohta with Takekoshi would make Takekoshi's apparatus nonoperative. A nonoperative combination cannot legally make a claim obvious. It is tautological that a combination improper for two references provides an improper basis for a combination of three references.

In addition to being inoperative, the combination of Takekoshi with Ohta is improper because Ohta teaches away from the process of Takekoshi. Ohta teaches the exclusion of special fixing steps as an advantage of ink-jet imaging. (See Ohta specification, column 1, line 19-24) Likewise, it teaches that an object of its invention is good fixability. (See Ohta specification, column 3, line 15) Therefore, one of ordinary skill in the art viewing Ohta as a whole would interpret it to exclude special fixing steps. But Takekoshi's process specifically uses special fixing steps; its apparatus specifically implements those special fixing steps. Ohta excludes special fixing steps, while Takekoshi demands special fixing steps, a classic case of references that teach away from their combination.

Because the combination of Takekoshi with the pigment ink of Ohta would be inoperative and because Ohta teaches away with Takekoshi, Applicants have traversed

this rejection based on the combination of Takekoshi, Ohta, and Iwao. Please promptly remove this obviousness rejection.

Likewise, the binary combination of Takekoshi with Iwao does not yield prima facie obviousness either. For instance, the simple combination does not teach the pigment ink requirement nor the limitation of "the pigment ink solvent absorbing layer having a void layer which absorbs a pigment ink solvent" as is required by Applicants' claims.

Moreover, Iwao does not teach using heat and pressure simultaneously to form an image. Rather, it uses heat to form an intermediate image and separately uses pressure to transfer that intermediate image to the recording media. Iwao merely teaches a platen roller 70 and a transfer roller 50 between which an ink image is transferred from a belt 40 to a sheet 60 as shown in Fig. 1 of Iwao's specification, and teaches nothing about a heating and pressing device that substantially simultaneously heats and presses a recording medium recorded by the recording head. Also, Iwao requires a hot melt ink. This hot melt ink is described as being solid phase at room temperature and comprises one wax vehicle. In fact, the ink is 70 weight percent paraffin wax. (Iwao specification, column 5, line 13-18).

As stated above, Takekoshi teaches heating and pressure to seal a dye-based ink underneath the thermoplastic layer of the surface of a print media. One of ordinary skill in the art would not look to Iwao for guidance regarding the process parameters for use in the apparatus or process of Takekoshi because the process implemented by Takekoshi is distinct from the process implemented by Iwao. Pressure and heating parameters for sealing a thermoplastic resin coating are unrelated to pressure parameters for transferring molten ink from an intermediate medium to a recording medium. Of course, an ordinary skilled artisan would consider this difference and would NOT look to Iwao for guidance in modifying Takekoshi's process or apparatus. Since Iwao does not contemplate using pressure to seal a water-sensitive dye, it cannot teach a skilled artisan how to modify a pressure used in sealing a water-sensitive dye. Iwao simply has nothing to do with Takekoshi. Therefore, there is no motive to combine Takekoshi and Iwao.

One of ordinary skill in the art would not be motivated to substitute Iwao's pressure into Takekoshi's process or apparatus because the processes are so far different that the skilled artisan would not reasonably expect success in making the substitution. But for the current claims, a case of prima facie obviousness requires this pressure substitution because it is incumbent upon the examiner to show that the prior art teaches or suggests each and every element of Applicants' claims. Because the examiner has not shown a motivation to substitute Iwao's pressure into Takekoshi's process or apparatus, the examiner has not made out a case of prima facie obviousness.

In any case, Takekoshi teaches away from the combination with Iwao. As discussed above, Iwao uses a hot-melt, wax-based ink. This ink is formulated by design to stay at the surface of the media. Takekoshi requires an ink that will penetrate through an outer thermoplastic layer into an ink fixing layer, which Iwao's ink will not do. Because Takekoshi teaches away from a combination with Iwao, it is not obvious to combine these references.

Because the process of Takekoshi and the separate heating and pressing steps of Iwao are so different, one of ordinary skill in the art would not look to Iwao to supply a pressure parameter for Takekoshi. Likewise, because Iwao teaches away from the combination with Takekoshi, Applicants have traversed this rejection based on the combination of Takekoshi, Ohta, and Iwao. Please promptly remove this obviousness rejection.

Because the examining has not provided a credible motivation for making this ternary combination and, regardless of that, because the ternary combination does not teach each and every element of the claimed invention, the examiner has not demonstrated prima facie obviousness or obviousness is appropriately traversed. Therefore, the examiner should promptly remove this obviousness rejection.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ohta et al (USPN 4,597,794) and Iwao (USPN 6,390,617) as applied to claim 33 above, further in view of Endo et al. (EP 0564,420).

This rejection requires, at its base, the same combination discussed for section three, above. Therefore, it exhibits at least the same flaws as discussed above in section three. Applicants reserve the right to traverse the combination of Takekoshi, Ohta, Iwao, and Endo in the future, if the examiner manages to remove the flaws from the base combination, as discussed above. And for the same reasons as discussed above for section three, this rejection is likewise traversed. The examiner should promptly remove this rejection.

5. Claims 17-19 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ohta et al (USPN 4,597,794) and Iwao (USPN 6,390,617) as applied to claim 33 above, further in view of Kaburagi et al (USPN 5,502,475).

This rejection requires, at its base, the same combination discussed for section three, above. Therefore, it exhibits at least the same flaws as discussed above in section three. Applicants reserve the right to traverse the combination of Takekoshi, Ohta, Iwao, and Kaburagi in the future, if the examiner manages to remove the flaws from the base combination, as discussed above. And for the same reasons as discussed above for section three, this rejection is likewise traversed. The examiner should promptly remove this rejection.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ohta et al (USPN 4,597,794) and Iwao (USPN 6,390,617) and Kaburagi et al (USPN 5,502,475) as applied to claims 33 and 19 above, further in view of Silverbrook (USPN 5,815,173).

This rejection requires, as its base, the same combination discussed for section three, above. Therefore, it exhibits at least the same flaws as discussed above in section three. Applicants reserve the right to traverse the combination of Takekoshi, Ohta, Iwao, and Silverbrook in the future, if the examiner manages to remove the flaws from the base combination, as discussed above. And for the same reasons as discussed above for

section three, this rejection is likewise traversed. The examiner should promptly remove this rejection.

7. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ohta et al (USPN 4,597,794) and Iwao (USPN 6,390,617) and Kaburagi et al (USPN 5,502,475) as applied to claim 33 and 19 above, further in view of Nakano et al. (USPN 6,012,794).

This rejection requires, as its base, the same combination discussed for section three, above. Therefore, it exhibits at least the same flaws as discussed above in section three. Applicants reserve the right to traverse the combination of Takekoshi, Ohta, Iwao, and Nakano in the future, if the examiner manages to remove the flaws from the base combination, as discussed above. And for the same reasons as discussed above for section three, this rejection is likewise traversed. The examiner should promptly remove this rejection.

8. Claims 5, 33-35 and 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo et al. (JP 05-1 12000) in view of Takekoshi (USPN 6,120,199) and Iwao (USPN 6,390,617).

The cited ternary combination does not amount to prima facie obviousness because the combination does not contain each and every element of the claimed invention and there is no motivation to make the combination: one of ordinary skill in the art would expect the combination to be inoperative or at least would not expect the combination to succeed, would not expect the combination to result in an improved invention, and would read the references as teaching away from their combination.

First and foremost, this combination does not teach the limitation of "the pigment ink solvent absorbing layer having a void layer which absorbs a pigment ink solvent". Therefore, the cited combination does not make Applicants' invention, as claimed,

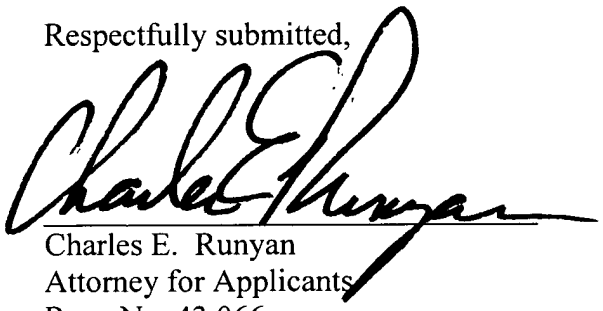
obvious. The examiner should promptly remove this rejection because a combination that does not teach all of the limitations of a claim, as a matter of law, does not demonstrate prima facie obviousness.

There is no motive to make the combination. Okubo, in paragraph 34, states that its ink is a phase changing ink and is a solid at room temperature. One of ordinary skill in the art would not expect Okubo's ink to be compatible with the process of Takekoshi, because one of ordinary skill in the art would not expect this Takekoshi's dye to operate as Okubo requires. One of ordinary skill would not expect Takekoshi's ink to appropriately change phase. Moreover, the temperatures taught by Takekoshi are related to fusing a thermoplastic layer -- a layer that is not present in Okubo. Takekoshi's temperatures have no relationship to changing the phase of an ink. Therefore, one of ordinary skill in the art would not consider Takekoshi even if that artisan detected a problem with Okubo's temperature. One of ordinary skill in the art starting with Okubo would NOT look to Takekoshi for guidance because of the incompatibility between the processes of Okubo and Takekoshi. Therefore, this combination is improper because the examiner has not provided a credible motivation for making it. Moreover, the examiner has provided no motive for making the three-way combination of Okubo, Takekoshi, and Iwao, which would require explaining why one of ordinary skill in the art would have a reasonable expectation of success in combining three incompatible processes.

The examiner should promptly remove this rejection.

Since all claims are in a condition for allowance, please issue a Notice of Allowability so stating. If I can be of any help, please contact me.

Respectfully submitted,



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Charles E. Runyan
Attorney for Applicants
Reg. No. 43,066

Squire, Sanders & Dempsey L.L.P.
One Maritime Plaza
Suite 300
San Francisco, CA 94111
Facsimile (415) 393-9887
Telephone (415) 954-0235
crunyan@ssd.com

resume